

REMARKS**I. Status of the Claims**

Claims 29-31 and 45-46 are pending.

Claims 29-44 were subject to a restriction requirement as articulated in the Office Action mailed August 26, 2003. Applicants elected Group I – Claims 29-31. As a result, Claims 32-44 are canceled herein without prejudice to their later assertion in this or a subsequent application.

New Claims 45-46 are added by this Amendment.

II. Concerning the Amendments

Claim 31 is amended to recite that it is directed to multi-phase mixtures. Support for the amendment appears at page 14, lines 1-6 of the Specification, as well as in the subsequent paragraphs appearing on pages 14-24 of the Specification.

New Claims 45-46 are similar to Claims 29-30, and are supported by page 18, lines 3-6 of the Specification.

Applicants respectfully request entry of the amendments. No new matter is presented.

III. Concerning the Rejections

Double Patenting under § 101:

Claim 31 is rejected under 35 USC 101 as claiming the same invention previously claimed by Claim 1 of U.S. Patent 5,744,015. Applicants respectfully request withdrawal of this rejection in view of the amendment to Claim 31 made herein.

In the event the Office deems Claim 31 to be subject to an obvious-type double patenting rejection, but otherwise allowable, Applicants request that they be allowed to submit an appropriate terminal disclaimer to obviate such rejection at that time. Consideration of such terminal disclaimer would not involve significant new

issues or reconsideration by the Office, and would only advance the prosecution of this Application.

Obviousness under §103 (a)

Claims 29-30 are rejected under 35 U.S.C. § 103 (a) as unpatentable over Joshi et al. (U.S. Patent 5,021,137) in view of Japanese Patent No. JP356041804A. The Office asserts that Joshi et al. show a solid electrolyte composition of perovskite structure containing lanthanide and in combination with Co – specifically pointing Applicants to the Example of the reference. The Office submits that “the composition of Example 3 has zero amounts of bismuth, cerium or mixtures of bismuth and cerium and therefore has less than 13 mol% of these amounts in the perovskite composition disclosed in the reference.” Emphasis in the original. The Office further acknowledges that Joshi et al. do not disclose a solid membrane of perovskite structure, but takes the position that, in view of the JP reference which is said to disclose a solid electrolyte membrane of perovskite structure, it would be within the skill of the art to configure the solid electrolyte composition of Joshi et al. into a membrane “because the secondary reference characterizes a membrane and solid electrolyte as being one and the same.” Applicants respectfully traverse the rejection, as it appears that the Office has misunderstood the disclosures made in the Joshi et al. and JP references.

Joshi et al. disclose an assembly to concentrate oxygen that contains a doped cerium oxide (ceria) electrolyte with oxygen ion conductivity, in combination with a perovskite material electrode, especially lanthanum strontium cobaltite. See, column 2, lines 40-43. The electrolyte, which appears to be primarily CaO doped cerium oxide electrolyte – see column 4, lines 53-56 and column 5, lines 4-5 – is primarily composed of cerium oxide. There are no teachings by the patentees that such electrolyte material has a perovskite structure. Rather, the electrodes made of the lanthanum strontium cobaltite ceramic are said to be of a perovskite structure, but they are also characterized by the patentees as being “porous” and are not part of the electrolyte material. See, column 3, lines 68 to column 4, lines 2 and claim 1 of the reference. There is no teaching by Joshi et al. of incorporating bismuth, cerium, or mixtures thereof, into the ceramic material said by to have a perovskite structure, as acknowledged by the Office. Further, Joshi et al. do not disclose, as the Office has also acknowledged, a solid membrane of perovskite structure.

The JP reference concerns separation of hydrogen from other gases using a solid electrolyte membrane that is said to be made of perovskite type oxide containing Sr and Ce as principal components and a specified metal – Sc, Y, Nd, and Zn. The membrane is said to be used such that "airtight chambers" are placed on both sides of the membrane. See, Abstract.

Applicants submit that the Office has misunderstood and confused the teachings of Joshi et al. Joshi et al. discloses use of an electrode which, although said to be lanthanum strontium cobaltite and having a perovskite structure, is clearly "porous" and also distinct from the specific electrolyte material employed in the Joshi et al. device. The electrode is not the electrolyte material, contrary to the reasons stated by the Office in the Office Action. Further, since the Joshi et al. electrode is porous, it would not be suitable for use in a membrane configuration as taught by the JP reference, as that reference clearly says that the membrane defines airtight chambers. Thus, Applicants submit the combination of the two references does not teach or suggest the claimed invention. The lanthanum strontium cobaltite material of the Joshi et al. reference is in a configuration that is apparently not a solid electrolyte and is also clearly porous. Thus, Applicants submit there is a substantial gap in the teachings between Joshi et al. and the JP reference and is not simply something which can be supplied by one of skill in the art.

Further, the two references do not disclose a solid membrane comprised of mixed metal oxide material of a perovskite structure containing a lanthanide in combination with Co, Sr or an oxide thereof, and containing less than 13 mol percent bismuth, cerium, or a mixture of bismuth and cerium as claimed. The Office takes the position that Joshi et al. disclose a solid electrolyte composition of perovskite structure containing lanthanide, in combination with Co, and also that the Joshi et al. composition has "zero" amounts of bismuth, cerium, or mixtures of bismuth and cerium. However, as mentioned above, the Joshi et al. composition of perovskite structure is said to be "porous" and is not characterized as a solid electrolyte. Further, Applicants' claimed invention recites that the solid membrane contains less than 13 mol percent bismuth, cerium, or a mixture of bismuth and cerium; and this recitation clearly requires the presence of bismuth, cerium, or mixtures thereof in the claimed membrane. The Office correctly observed that the Joshi et al. reference does not teach having bismuth or cerium, so the teachings of Joshi et al. are clearly distinguishable from the claimed invention.

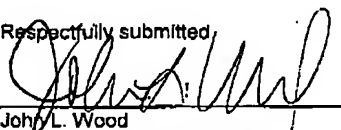
Applicants submit Claims 29-30 of the present Application are not unpatentable over the disclosures of Joshi et al. in view of the JP reference for these reasons. Applicants submit these claims are in condition for allowance and respectfully request withdrawal of the rejection.

IV. Concluding Remarks

Applicants note U.S. Patent 3,644,147 (Young II) mentioned in the Office Action, and do not believe it is applicable to the claims of the present Application.

Applicants submit that Claims 29-31 and 45-46 are in condition for allowance and respectfully request a Notice of Allowance for the same at an early date.

Respectfully submitted,



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